



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SN

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/507,465 02/22/00 LANGLEY

R M4065.0018/P

EXAMINER

IM52/0813

Thomas J D Amico
Dickstein Shapiro Morin & Oshinsky LLP
2101 L Street NW
Washington DC 20037-1526

ANDERSON, M

ART UNIT

PAPER NUMBER

1765

DATE MAILED:

08/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/507,465

Applicant(s)

LANGLEY ET AL.

Examiner

Matthew A. Anderson

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 10-16, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saeki et al. (US 5,460,684) in view of Nakayama et al. (US 4,902,531).

Saeki et al. discloses a plasma etching apparatus used to etch a semiconductor wafer. The plasma etching apparatus includes an electrostatic chuck, for attracting and holding a semiconductor wafer, provided on a susceptor. See abstract. Saeki et al.'s electrostatic chuck and susceptor read on applicant's chuck and pedestal, respectively.

Saeki et al. discloses that the plasma etching apparatus contains a cooling block **21** with a bore **22**, wherein bore **22** is used to circulate coolant. See column 4, lines 4-6. Saeki et al. also discloses that susceptor **2** is fixed on cooling block **21**. See column 4, lines 11-18. Saeki et al.'s susceptor **2** reads on applicant's pedestal. In column 4, lines 6-10, Saeki et al.'s states that introduction tube **22a**, which supplies coolant into the process chamber, and an exhaustion tube **22b**, which removes coolant from the

Art Unit: 1765

process chamber, are connected to bore **22**. This reads on applicant's steps of internally cooling the chuck.

Saeki et al. discloses that the semiconductor wafer is unloaded after completion of etching. Saeki et al. shows that pusher pins **27**, which are actuated by driving means **26**, project so as to push up the wafer from susceptor **2**. See column 4, lines 54-56; and column 5, lines 51-62. This reads on applicant's step of unloading the wafer from the chuck after plasma etching.

Claim 10 differs from Saeki et al. by specifying that the pedestal is rotating during plasma etching of the wafer. Nakayama et al. discloses a vacuum processing method (applicable to plasma etching see col. 9 lines 20-30) and apparatus wherein a susceptor, which supports a substrate to be processed and is fixed to a rotating shaft, is contained within a vacuum chamber. See column 4, lines 65-68; column 5, lines 12-17; and abstract. Nakayama et al.'s susceptor reads on applicant's pedestal. It is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify Saeki et al. by using a rotating susceptor, as disclosed by Nakayama et al., because it would have been anticipated to produce an expected result.

Claim 15 specifies that the process parameters be initialized. Applicant states that the process parameters include gas flow, process chamber pressure, wafer temperature, and pedestal rotation speed. Saeki et al. states that process gas flow is supplied and stopped with the use of a high-frequency power supply; process chamber pressure is set and maintained with the use of a vacuum pump; and wafer temperature

is set with the use of a heat conductive gas and a cooling block. See column 3, lines 62-66; column 5, lines 26-53. Nakayama et al. states that the pedestal rotation speed is monitored with the use of a rotation motor. See column 5, lines 20-24. It is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to control the process parameters, as listed in claim 15, because control of each process parameter would be inherent in plasma etching methods and apparatuses and their combination would have been anticipated to produce an expected result.

Response to Arguments

5. Applicant's arguments filed 6/6/01 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Saeki et al concerns plasma etching. Nakayama itself discloses in col. 9 lines 20-30 that the descriptions therein were equally applicable to sputtering, plasma etching, and plasma

CVD. Motivation is found in that both references suggest or disclose methods of plasma etching substrates. Nakayama et al. does suggest a rotating the pedestal and plasma etching a wafer while the pedestal is rotating.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Nakayama et al. suggests using a rotating pedestal in plasma etching in col. 9 lines 20-30. The arguments concerning CVD are moot in light of this suggestion.

The argument that no prima facie case of obviousness was proven because the examiner fails to describe or suggest what the expected results would be is not convincing. The expected result would be a method of plasma etching utilizing a rotating pedestal (i.e. susceptor) and a chuck for holding the wafer to be etched on the pedestal. Combining known components of plasma etching systems and then using them would have been obvious.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., better film uniformity) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).


Art Unit: 1765

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Anderson whose telephone number is (703) 308-0086.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin L. Utech can be reached at (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3599 for regular communications and (703) 305-6078 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

MAA
August 9, 2001


ROBERT KUNEMUND
PRIMARY EXAMINER